

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 December 2005 (15.12.2005)

PCT

(10) International Publication Number
WO 2005/118890 A2

(51) International Patent Classification⁷: **C21C 5/56**,
C22B 7/00, C21C 7/10

(21) International Application Number:
PCT/GB2005/002130

(22) International Filing Date: 26 May 2005 (26.05.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0412105.9 29 May 2004 (29.05.2004) GB

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

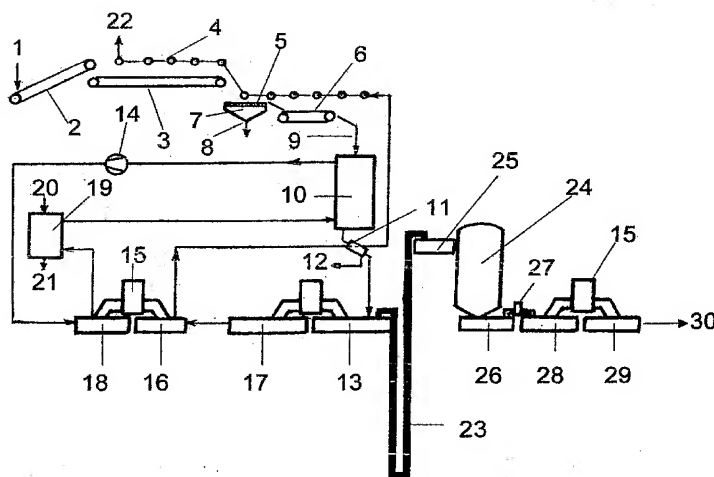
(71) Applicant and
(72) Inventor: WARNER, Noel [GB/GB]; 40 High House Drive, Rednal, Birmingham B45 8ET (GB).

Published:
— without international search report and to be republished upon receipt of that report

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RECOVERY OF STEEL FROM CONTAMINATED SCRAP



(57) Abstract: This invention provides a method for overcoming the adverse effects of disintegration of molten steel streams due to sub-surface growth of carbon monoxide bubbles when exposed to reduced pressures and thus permits refining of liquid scrap much the same way as if it were a quiescent liquid melt. Steel scrap contaminated with copper, tin, zinc and organics, such as PVC coating, is preheated and melted continuously using melt circulation and then continuously refined in-line to yield high quality liquid steel and separate non-ferrous metal byproducts by straightforward physical desorption under reduced pressure using an inert strip gas within a desorber and then subsequent iron vapour condensation by direct contacting with liquid steel followed by selective condensation of copper initially and then recovery of tin. Formation of dioxins from scrap containing chlorine is precluded by inline scrubbing of pyrolysis gas formed during scrap preheating. The initial melting of preheated scrap employs melt circulation and gas combustion rather than fossil fuel generated electricity and is thus inherently energy efficient.

WO 2005/118890 A2